

REMARKS

Double Patenting Rejection

Applicant filed two nearly identical patent applications on January 21, 2006, including the present application. Applicant has expressly abandoned the other patent application, U.S. Patent Application No. 10/761,566. Thus, Applicant respectfully requests withdrawal of the present double patenting rejection.

Claim Rejections under 35 U.S.C. § 112

Claim 14 is amended herein to depend from claim 1. Applicants respectfully request reconsideration of the rejection of claim 14.

Claim Rejections under 35 U.S.C. § 102(e)

Reconsideration of the rejection of claims 1-11, 13-17, 24-32, and 38-40 under 35 U.S.C. § 102(e) as being anticipated by Liess et al. (U.S. Patent No. 6,707,027) is respectfully requested.

Claim 1

Reconsideration of the rejection of claim 1 under 35 U.S.C. § 102(e) as being anticipated by Liess et al. is respectfully requested.

Claim 1 is directed to a data input device for use with a tracking surface having light-scattering properties, said device comprising:

a single laser having a cavity from which a light beam is projected, said laser being configured to project the light beam onto said tracking surface, at least a portion of the light beam striking said tracking surface reflecting back into the cavity of said laser and thereby altering at least one characteristic of the projected light beam;

a detector associated with the laser for detecting said altered characteristic of the light beam projected by the laser; and

a controller responsive to the detector for determining the relative distance between said device and said tracking surface as a function of the altered characteristic of the projected light beam detected by the detector.¹

None of the references, taken individually or in combination, discloses or suggests these novel elements.

None of the references discloses a data input device having a controller responsive to the detector for determining the relative distance between the device and the tracking surface as a function of the altered characteristic of the projected light beam detected by the detector. Applicants' disclosure explains the importance of the controller for determining the relative distance between the device and the tracking surface. For example, the controller may compare the relative distance between the device and the tracking surface to a lift-off detection distance. The controller may then alter the data output of the data input device as a function of the comparison. More specifically, the controller can suspend tracking of relative movement between the device and the tracking surface when the device is spatially separated from the tracking surface by at least the lift-off detection distance; or conversely, the controller can maintain tracking of relative movement between the device and the tracking surface when the device is spatially separated from the tracking surface by less than the lift-off detection distance. Again, none of the references discloses such a device with a controller for determining the relative distance between the device and the tracking surface. Without a teaching for such a controller, Liess et al. cannot anticipate claim 1.

To anticipate a claim, each and every element of the claim must be found, either expressly or inherently described, in a single prior art reference.² Without teaching each element, Liess et al. cannot anticipate claim 1. Here, Liess et al. fails to teach a controller for determining the relative distance between the device and the tracking surface as defined by claim 1. In particular, Liess et al. do disclose detecting that movement in the z-direction has occurred. But Liess et al. provide no teaching or suggestion for quantifying such movement. In fact, Liess et al. explicitly teach that quantifying such movement accurately is "not necessary." Liess et al. state that

In applications wherein the movement of a human finger in the Z direction and the input device relative to each other is used to perform a click function, it suffices to detect that such a movement takes place. An accurate measuring of the displacement of the object is not necessary so that the Z-measurement may be rather rough. Even the direction of the movement need not be detected.³

Thus, Liess et al. teach that any effort to quantify the movement beyond merely noting that there was some movement is unnecessary. This teaching is not anticipatory. One skilled in the art

¹ (emphasis added).

² M.P.E.P. § 2131.

³ U.S. Patent No. 6,707,027, column 12, lines 50-56 (emphasis added).

would not look to Liess et al. for any teaching regarding determination of the relative distance because Liess et al. explicitly state that there is no need to make such a determination. With such an explicit disclaimer of the relevance of this feature of claim 1, Liess et al. cannot be said to anticipate claim 1, and Applicants will spend no more time arguing this clear and unambiguous argument here.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1. Claims 2-17, which depend directly or indirectly from claim 1, are submitted as patentable for the same reasons as set forth above with respect to claim 1.

If the Office maintains the rejection of the present claim, Applicants request the courtesy of a phone call to the undersigned at (314) 231-5400.

Claim 26

Reconsideration of the rejection of amended claim 26 under 35 U.S.C. § 102(e) as being anticipated by Liess et al. is respectfully requested.

Amended claim 26 is directed to a method comprising:

projecting a light beam onto a tracking surface from a laser having a laser cavity, wherein a data input device includes said laser and laser cavity;
receiving at least a portion of the light reflected by the tracking surface within the laser cavity;

mixing said received reflected light with light generated within said laser cavity, said mixing thereby altering at least one characteristic of said projected light beam;

projecting a light beam with said at least one altered characteristic from said laser cavity;

detecting said at least one altered characteristic of the light beam, **wherein the projected light beam is reflected from a reference surface acting as a field stop for limiting direct detection of light reflected from the tracking surface prior to said detecting;** and

determining the relative distance between said device and said tracking surface as a function of the at least one altered characteristic of the projected light beam.⁴

Here, the addition of a reflection from a reference surface for limiting detection of light directly reflected from the tracking surface provides the benefits discussed by Applicants in the application. According to this method, the light beam detected is reflected from the reference

⁴ (emphasis added, amended dependent claim 26 shown with elements from independent claim 24).

surface, and any light reflected by the tracking surface is not detected. The reference surface acts as a field stop, limiting light from directly reflecting from the tracking surface to the detector. Detecting only light reflected by the reference surface helps minimize any noise or signal aberrations introduced by features of the tracking surface. In other words, without reflection by a reference surface, reflected light from the tracking surface or ambient light reflected between the device and the tracking surface can reach the detector, thereby increasing the noise in detected signals. With reflection by a reference surface, however, the noise or signal aberrations introduced by the tracking surface are minimized. Without a teaching for such reflecting from a reference surface, Liess et al. cannot anticipate amended claim 26.

To anticipate a claim, each and every element of the claim must be found, either expressly or inherently described, in a single prior art reference.⁵ Without teaching each element, Liess et al. cannot anticipate amended claim 26. Here, Liess et al. fail to teach such reflecting by a reference surface. The Office's reference to reflection from transparent window 12 of Liess et al.⁶ does not constitute a reference surface as defined by amended claim 26. The interface of the transparent window 12 of Liess et al. can reflect light as a reference surface, instead of the tracking surface. But because the transparent window in the cited reference is transparent, it cannot act as a field stop that limits light from directly reflecting from the tracking surface to the detector, as required by claim 26. The transparent window 12 can allow detection of light directly from the tracking surface. Without further teaching, therefore, Liess et al. cannot anticipate amended claim 26.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 26. Claims 27 and 28, which depend directly or indirectly from claim 26, are submitted as patentable for the same reasons as set forth above with respect to claim 26.

If the Office maintains the rejection of the present claim, Applicants request the courtesy of a phone call to the undersigned at (314) 231-5400.

Claim 38

Reconsideration of the rejection of claim 38 under 35 U.S.C. § 102(e) as being anticipated by Liess et al. is respectfully requested.

⁵ M.P.E.P. § 2131.

⁶ August 8, 2006 Office action, page 4, lines 21-22.

Claim 38 is directed to a data input device for use with a tracking surface comprising:

a single laser having a cavity from which a light beam is projected, said laser being configured to project the light beam onto said tracking surface, at least a portion of the light beam striking said tracking surface reflecting back into the cavity of said laser and thereby altering at least one characteristic of the projected light beam;

a detector associated with the laser for detecting said at least one altered characteristic of the light beam projected by the laser; and

a controller responsive to the detector for operating the device in a tracking mode or a non-tracking mode depending upon said at least one altered characteristic of the projected light beam.⁷

Here, the controller responsive to the detector operates the device in a tracking mode or a non-tracking mode depending upon the altered characteristic of the projected light beam. This switch in operation between the tracking mode and the non-tracking mode allows the user to “clutch” the device, or move the device and tracking surface with respect to one another without recording any tracking movement (such as when a mouse is picked up). Without disclosing such a controller for operating in these two modes, Liess et al. cannot anticipate amended claim 38.

To anticipate a claim, each and every element of the claim must be found, either expressly or inherently described, in a single prior art reference.⁸ Without teaching each element, Liess et al. cannot anticipate amended claim 38. Here, Liess et al. fail to teach operation in a tracking mode or a non-tracking mode. The Office’s reference to “operating the device in a tracking mode (cursor movement) or a non-tracking mode (click mode)⁹ is not the same as the claimed modes of operation. The click function described in Liess et al. related to the use of the components of tracking for click detection, in addition to scrolling. For example, while scrolling or when not scrolling, the user may move in the z-direction and Liess et al. will consider the movement an indication of a click, such as of a mouse button or touch pad. There is no discussion of suspension of tracking according to Liess et al. Rather, it is clear that scrolling may continue while clicking occurs. The clicking function and scrolling function are independent, such that one or both may occur. Liess et al. provide no teaching for suspension of tracking based upon an altered characteristic of the light beam. It is unclear how Liess et al. contemplate performing such a clutching function.

⁷ (emphasis added).

⁸ M.P.E.P. § 2131.

⁹ August 8, 2006 Office action, page 5, lines 7-9.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 38. Claims 39 and 40, which depend directly from claim 38, are submitted as patentable for the same reasons as set forth above with respect to claim 38.

If the Office maintains the rejection of the present claim, Applicants request the courtesy of a phone call to the undersigned at (314) 231-5400.

Claim Rejections under 35 U.S.C. § 103(a)

Reconsideration of the rejection of claims 12 and 33-37 under 35 U.S.C. § 103(a) as being unpatentable over Liess et al. is respectfully requested.

Claim 33

Reconsideration of the rejection of claim 33 under 35 U.S.C. § 103(a) as being unpatentable over Liess et al. is respectfully requested.

Claim 33 is directed to a method comprising comparing relative distance between the device and the tracking surface to a lift-off detection distance and altering the data output of the data input device as a function of the comparison. The Office explicitly admits that Liess et al. provide no such comparison. The Office then states that Liess et al. do teach “measuring a Z direction movement of the human finger and the tracking surface . . .”¹⁰ But as discussed with respect to claim 1, Liess et al. provide no such teaching for measurement. The portion of the Liess et al. reference cited by the Office pertains to velocity detection, not measurement. Moreover, in other portions of the disclosure, Liess et al. specifically teach that quantifying such movement is “not necessary” (see excerpted portions above with respect to claim 1). With such an explicit teaching to the contrary, the Office cannot bend the clear teaching of Liess et al. back toward Applicants’ claimed invention.

To establish a *prima facie* case of obviousness, the Office must (1) provide some suggestion or motivation in the cited reference, or in the knowledge generally available to one skilled in the art, to modify the reference, (2) demonstrate a reasonable expectation of success in the modification, and (3) demonstrate that the prior art reference teach or suggest all of the claim

¹⁰ *Id.* at page 5, lines 5-6.

limitations.¹¹ Here, the Office has not produced a *prima facie* case satisfying these three requirements, so Applicants are under no obligation to submit evidence of nonobviousness.

In particular, the Office fails to demonstrate that Liess et al. provide some suggestion or motivation to modify Liess et al. Here, the teaching is quite the opposite. Liess et al. suggests that the modifications toward Applicants' claimed invention would not be advisable or necessary. Such a teaching cannot be ignored by the Office in making an obviousness rejection. Furthermore, Liess et al. does not teach all of the claim limitations of claim 33. Clearly, Liess et al. teach neither the comparison of claim 33 nor the altering the data output as a function of the comparison. These omissions are significant. Without satisfying each prong of the *prima facie* case, the Office's rejection is improper. As such, Applicants expect that any further rejection of claim 33 will not be final.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 33. Claims 34-37, which depend directly or indirectly from claim 33, are submitted as patentable for the same reasons as set forth above with respect to claim 33.

If the Office maintains the rejection of the present claim, Applicants request the courtesy of a phone call to the undersigned at (314) 231-5400.

Reconsideration of the rejection of claims 18-23 under 35 U.S.C. § 103(a) as being unpatentable over Liess et al. in view of Kinrot et al. (U.S. Patent No. 6,741,335 B2) is respectfully requested.

Claim 18

Reconsideration of the rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Liess et al. in view of Kinrot et al. is respectfully requested.

Claim 18 discloses a data input device comprising a controller responsive to the detector for determining the relative distance between said device and said tracking surface as a function of the altered characteristic of the projected light beam detected by the detector. This feature is the same feature discussed above with respect to the anticipation rejection of claim 1. Here, the standard is obviousness, but the rejection fails for the same and additional reasons.

¹¹ M.P.E.P. § 2143.

First, neither Liess et al. nor Kinrot et al. teach each of the claim elements. In particular, as discussed with respect to claim 1, Liess et al. fails to disclose a controller responsive to the detector for **determining the relative distance between said device and said tracking surface** as a function of the altered characteristic of the projected light beam detected by the detector. Applicants do not believe that Kinrot et al. teach this element, and the Office cites Kinrot et al. for an entirely different teaching. Thus, neither cited reference teaches this element.

Second, neither reference provides a motivation or suggestion to combine, and as abundantly discussed above, Liess et al. teaches away from any such combination when it teaches that determination of any such relative distance is unnecessary.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 18. Claims 19-23, which depend directly or indirectly from claim 18, are submitted as patentable for the same reasons as set forth above with respect to claim 18.

If the Office maintains the rejection of the present claim, Applicants request the courtesy of a phone call to the undersigned at (314) 231-5400.

CONCLUSION

In view of the foregoing, favorable reconsideration and allowance of this application is requested.

Applicants have reviewed the cited but unapplied references and have found them to be no more pertinent than the art discussed above.

The Applicants wish to expedite prosecution of this application. If the Examiner deems the claims not in condition for allowance, the Examiner is invited and encouraged to telephone the undersigned to discuss making an Examiner's amendment to place the claims in condition for allowance.

Applicants do not believe that a fee is due. But if the Commissioner determines otherwise, he is authorized to charge Deposit Account No. 19-1345.

Respectfully submitted,



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